

Nalco Docket No.: 7744-NES

OFFICIALCLAIMS

1-13 (canceled)

14. (presently amended) A method of stabilizing a clay-containing formation during a sub-surface well stimulation process, the method comprising the steps of:

(i) providing a stimulation fluid comprising an aqueous solution of one or more polymers selected from the group consisting of poly(dimethylaminoethylmethacrylate quaternary salt), poly(dimethylaminoethylacrylate quaternary salt) and dimethylaminoethylmethacrylate quaternary salt-dimethylaminoethylacrylate quaternary salt copolymer, wherein the polymers have a number average molecular weight of about 1,000 to about 100,000 and wherein said stimulation fluid does not contain added salt; and

(ii) contacting the ~~sub-surface~~ formation with the stimulation fluid.

15. (presently amended) The method of Claim 14 wherein the polymers have a number average molecular weight of about 1,000 to about 10,000.

16. (original) The method of claim 15 wherein the polymers are selected from the group consisting of poly(dimethylaminoethylmethacrylate methyl chloride quaternary salt), poly(dimethylaminoethylacrylate dimethylsulfate quaternary salt) and dimethylaminoethylmethacrylate methyl chloride quaternary salt-dimethylaminoethylacrylate dimethyl methyl chloride quaternary salt copolymer.

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17. (original) The method of Claim 16 wherein the stimulation fluid comprises an aqueous solution of poly(dimethylaminoethylmethacrylate methyl chloride quaternary salt).

18. (canceled)

19. (canceled)

20. (original) The method of Claim 14 wherein the stimulation fluid further comprises one or more components selected from the group consisting of viscosifying agents, crosslinking agents, bactericides, breakers, ion control agents, foaming agents, gas stabilizers and liquefied gas stabilizers and combinations thereof.

21. (new) A method of stabilizing a clay-containing formation during a sub-surface well stimulation process, the method comprising the steps of:

(i) providing a stimulation fluid comprising an aqueous solution of one or more polymers selected from the group consisting of poly(dimethylaminoethylmethacrylate quaternary salt), poly(dimethylaminoethylacrylate quaternary salt) and dimethylaminoethylmethacrylate quaternary salt-dimethylaminoethylacrylate quaternary salt copolymer, wherein the polymers have a molecular weight that is sufficiently low to inhibit clay swelling and wherein said stimulation fluid does not contain added salt; and

(ii) contacting the formation with the stimulation fluid.

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22. (new) The method of claim 21 wherein the polymers are selected from the group consisting of poly(dimethylaminoethylmethacrylate methyl chloride quaternary salt), poly(dimethylaminoethylacrylate dimethylsulfate quaternary salt) and dimethylaminoethylmethacrylate methyl chloride quaternary salt-dimethylaminoethylacrylate dimethyl methyl chloride quaternary salt copolymer.

23. (new) The method of Claim 22 wherein the stimulation fluid comprises an aqueous solution of poly(dimethylaminoethylmethacrylate methyl chloride quaternary salt).

24. (new) The method of Claim 21 wherein the stimulation fluid further comprises one or more components selected from the group consisting of viscosifying agents, crosslinking agents, bactericides, breakers, ion control agents, foaming agents, gas stabilizers and liquefied gas stabilizers and combinations thereof.

25. (new) The method of claim 14 wherein the stimulation fluid further comprises one or more proppants.

26. (new) The method of claim 21 wherein the stimulation fluid further comprises one or more proppants.